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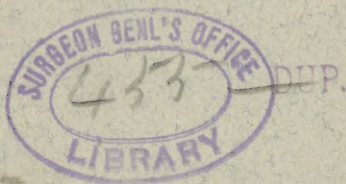
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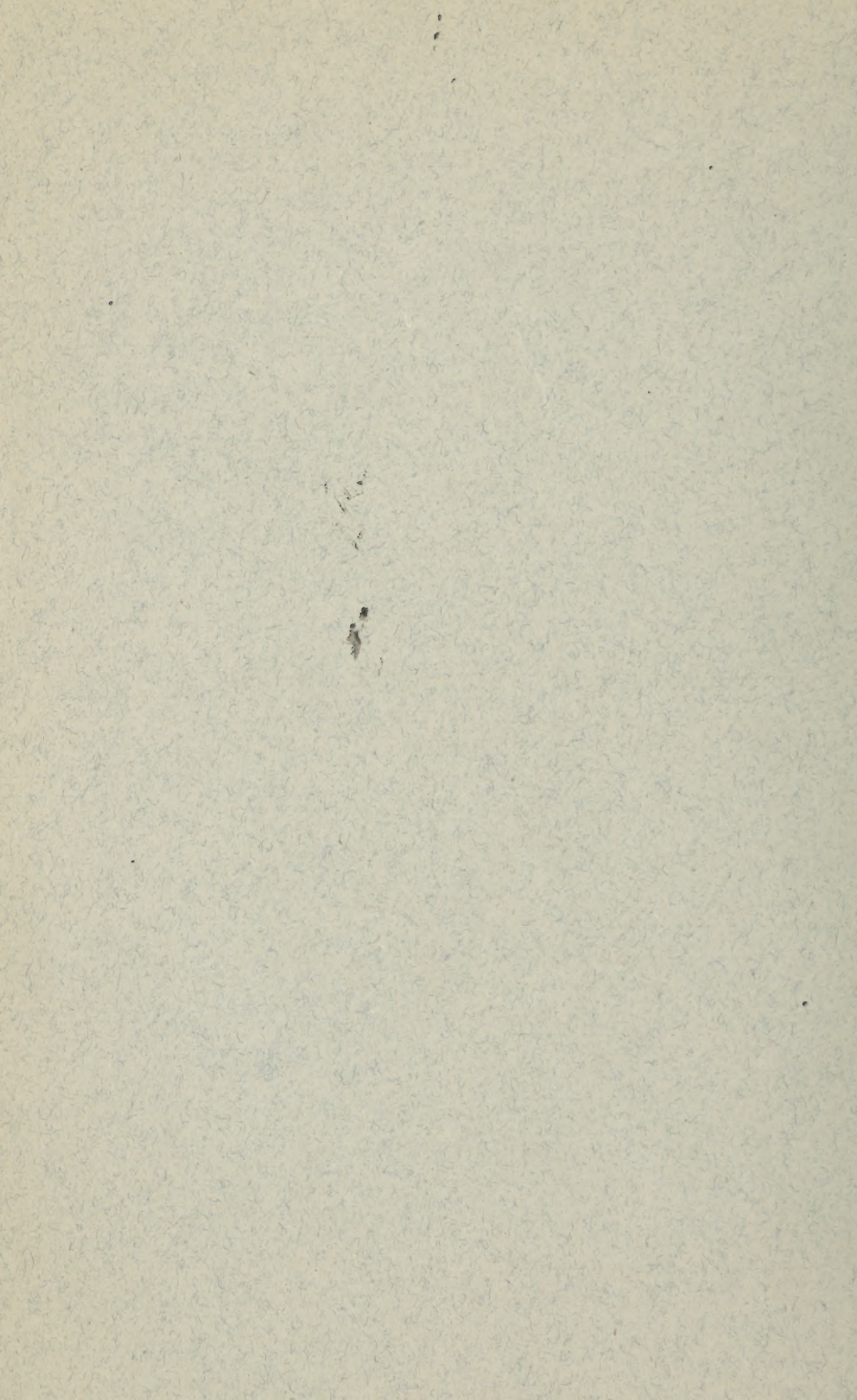
BY

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MALIGNANT DEGENERATION

IN

DERMOID CYSTS.

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MALIGNANT DEGENERATION IN DERMOID CYSTS.

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THE great importance of dermoids is best known to the abdominal operator, who meets them frequently. This importance, both clinical and pathological, is much greater than the small amount of attention often bestowed upon them in systematic works would seem to indicate.

In a table of 2275 ovariectomies analyzed by Olshausen (*Diseases of the Ovaries*, 1887, p. 375), 3.5 per cent. of the tumors were found to be dermoids, though in Spencer Wells's 1000 cases small dermoids in other growths had not been counted. Olshausen estimates that from 4 to 5 per cent. of all abdominal tumors operated upon are of this character. Greig Smith (*Abdominal Surgery*, 1889, p. 110) gives the proportion as 10 per cent. of all ovarian tumors, though this is probably too high.

In any study of the subject, it must not be forgotten that dermoid tumors are very frequently met in other parts of the body, though that fact is ignored by many writers, whose theories of their development presuppose the presence of an ovum.

Lebert reported 188 cases, of which over 30 per cent. were found in other situations. The testicle is the most frequent seat next to the ovary (Rindfleisch), the eye coming next; while they are also found in the neck, pharynx, perineum, brain, mediastinum, mesentery, lung, peritoneum, stomach, kidney, bladder, rectum, and elsewhere. (For references, see Lebert, *Gazette Méd. de Paris*, 1852, pp. 720, 793, and 808. See also, Meckel, *Journ. Compl. du Dict. des Sci. Méd.*, t. iv. 122, 227.)

It is, therefore, chiefly on account of the greater frequency of ovarian dermoids, and their greater liability to degenerate or to be involved in neighboring disease-processes, that these possess

greater clinical interest, and that this study is practically confined to dermoids found in the ovary.

As is well known, dermoids at times grow very slowly, and may give rise to no symptoms during a long life—*e. g.*, a case reported by Potter, in a woman aged eighty-three years. A considerable number, however, undergo various degenerations of the stroma, especially colloid degeneration—a fact of great clinical interest. Lebert has reported 17 cases of this kind, and many others have been observed, almost any operator having seen some instances. The occurrence of malignant degeneration, either of the tumor or in the pedicle after removal, while not so common, is a matter of grave importance which should always be remembered in dealing with these growths. Doran (*Clinical and Pathological Observations on Tumors of the Ovary*, etc., 1884, p. 90) describes one case in which small white, almost diffuent, masses were found, which proved to be round-celled sarcoma. Typical connective-tissue was found, also much that was poorly developed or embryonal, the last shading off into typical sarcomatous structure.

Greig Smith removed, in 1888, a suppurating dermoid cyst, in the wall of which was a solid sarcomatous growth as large as a hen's egg (*Abdominal Surgery*, 1889, p. 111). Unverricht and Bantock (quoted by Olshausen, *loc. cit.*, p. 351) have also reported sarcomata. Kocher found, in a case of bilateral dermoid disease, medullary cancer of one tumor. Heschl, and also Wahl, found cancerous dermoids, the colon being involved in the case reported by the latter. Fleischlen has accurately described (*Zeitschrift f. Geb. u. Gyn.*, Bd. vii. S. 450) a case operated on by Schröder, in which one ovary contained a dermoid cyst, a proliferating cystoma, and sarcomatous degeneration of the connective tissue of the cyst-walls. Thornton is quoted by Doran as having seen "several cases" in which malignant deposits have recurred in the pelvis two or three years after the removal of large dermoid cysts containing soft white growths strongly resembling sarcoma.

A specimen is here presented which exhibits a typical carcinomatous degeneration in the wall of a dermoid cyst removed by Dr. J. Price. The malignant mass is as large as a small fist, and is situated entirely within the limits of the dermoid, which is of large size, its main cavity having contained more than a quart of semifluid matter. This has been removed for convenience in preservation, a

few hairs being allowed to remain. The carcinoma is quite soft, and easily breaks, with a granular fracture. It is softest in the centre, where a small recent hemorrhage has occurred, perhaps from handling during removal. No part of the tumor has broken down, nor is granulation tissue present. The entire growth, consisting of the cyst and solid cancerous mass, is enclosed in the same capsule, and was readily removed entire from the pelvis. The Fallopian tube is readily distinguished, and has apparently undergone but little structural change.

A careful microscopical study has been made by my friend, Dr. J. P. Crozer Griffith, the character of whose work is well known. His description is as follows: "The wall of the cyst proper, taken close to the side of the newgrowth, but not touching it, exhibits a poorly-developed papillary layer of squamous epithelial cells, and below this a rather thick layer of connective tissue resembling that of the skin, except that it is rather imperfectly developed: the fibres being in many places shorter and finer, and having the appearance of younger tissue, though the number of nuclei is small. Blood-vessels are numerous. A few small nests of cells are to be found scattered through the connective-tissue layer, and some of these cells, at least, are distinctly epithelial. One hair, with its hair-follicle, was found.

"The portion of the cyst-wall with the newgrowth attached does not differ from that described, except at the portion most distant from the interior of the cyst; here the tissue is evidently cancerous. Large numbers of rather small polyhedral epithelial cells, with the cell-body rather large as compared with the size of the nucleus, infiltrate the connective tissue to some extent; but still farther from the cyst-centre they are arranged in dense masses, with few connective-tissue septa, forming very large nests of cells. The cancerous portion is separated rather sharply from the healthy connective tissue of the wall.

"The portions cut from the centre of the newgrowth attached to the cyst-wall are entirely of the cancerous structure described. The cells, however, stain but slightly, are quite granular, and are evidently well advanced in fatty degeneration. The nuclei are often nearly or quite invisible. There is a large amount of granular debris. The cells are very numerous as compared with the amount of connective tissue, but the latter is well formed, and, therefore, the tumor cannot be called carcinoma granulorum."

A few words as to the origin of dermoids, before proceeding to consider the causes of their malignant degeneration. No one doubts that they are congenital. Seven cases were collected by Pigné which occurred in the newborn. Since they occur in the male and in various parts of the body, all connection with a pre-existing ovum, or a genital impress, must be excluded from any general theory of origin. The difficulties in the way of the various theories have largely disappeared as the result of recent studies, and the best present view is a development of the old one of Heschl, that portions of the epiblast, or even of the mesoblast and hypoblast, have been incarcerated among other tissues. The difficulty about accounting for this incarceration in the case of the ovary was removed when His demonstrated that the incarceration of cells might occur before the formation of the blastodermic layers. (*Untersuch über die erste Anlage des Wirbelthier leibes*. Leipzig, 1868.)

J. Bland Sutton, in a masterly argument from the standpoint of comparative morphology (*Dermoids*, 1889, p. 131), has recently shown, too, the identity of ovarian follicles with the acini of glands. Says he: "As the membrana granulosa is potentially mucous membrane, and as skin and mucous membrane are morphologically identical and convertible structures, cysts containing skin or mucous membrane and their appendages are not more remarkable in the ovary than cysts and neoplasms occurring in connection with other glands."

To what causes, then, are we to attribute the malignant degeneration of these misplaced structures? First of all to the general law that any misplaced tissues are liable to degeneration, especially to malignant degeneration. This is well seen in the case of papillomata, but remarkably so in the case of angiomas and pigmented nævi (Zeigler, *Pathol. Anat.*, 1883, p. 257). The same is also seen in the liability of cryptorchids to malignant disease of the undescended testicle (Agnew, *Surgery*, ii. 568), encephaloid disease being the most common, according to Gant.

While the influence of traumatism in determining morbid growths is not proven, there is strong evidence that it is an important factor. Granted that the tissues in a dermoid of the ovary are good soil for the newgrowth, the firm adhesions usually present,

the more or less unyielding character of the contents of the cyst make it liable to pressure or injury from the neighborhood of the uterus and the rectum. Conditions, therefore, combine to make the traumatic influence on causation as effective as possible in the case of dermoids of the ovary.

Another great cause of malignant disease may be traced to the fact that embryonal connective tissue is usually abundant in their walls. According to the now widely-accepted theory of Cohnheim as to the origin of tumors, all such growths result from the morbid development of embryonal or undeveloped cells which have not been utilized in constructing normal tissues, and which have persisted in the otherwise mature organism. These embryonic cells may remain inactive for an indefinite time, or may, under proper stimulus, proceed to multiply and develop a tumor. Now, while this cannot be regarded as proven, but only as the best hypothesis yet advanced, it is still very interesting to find that dermoid cysts frequently contain in their walls undeveloped connective tissue in considerable quantities, as we shall presently see. We have already noticed that the sarcoma, the connective-tissue tumor, is the most common form found clinically, and it is not unreasonable to explain its origin in this way.

The tumor above referred to, which was removed by Bantock, showed, among typical dermoid elements, two fleshy tuberosities "the size of small potatoes." These, when examined, showed abundant lymphoid tissue. In some parts the connective tissue was well developed, but it was mostly embryonic. Large spindle cells and collections of round cells abounded, the arrangement bearing "every resemblance to the newgrowths known as spindle-celled sarcoma and round-celled sarcoma elsewhere" (*vide* Doran, p. 91). In a case reported by Flaischlen (*loc. cit.*, p. 450) embryonic ovarian tissue was found. Doran speaks of the large amount of lymphoid tissue frequently found, and suggests its possible relation to malignant growths (p. 88).

In the light of the above facts the question of prognosis cannot but be influenced. The outlook, as far as operation mortality goes, is probably almost as good as in ordinary proliferating cystoma, though adhesions are apt to be formidable. As regards ultimate recovery, however, the possible development of malignant disease

should not be overlooked, and the parts removed should be carefully examined for suspicious nodules, especially where removal has been necessitated by increasing pain, and not from the coincident development of simple cysts. The fact should also be noted that in the general history of sarcoma metastasis to lung or liver is quite as common as recurrence at the seat of operation.

